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IPC-2577

Sectional Requirements for Supply Chain Communication of Manufacturing Quality Assessment - Product Data eXchange (PDX)

Proposed Standard for Ballot

IPC-2577

February 2005

A standard developed by IPC

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Standards Should:

- Show relationship to Design for Manufacturability (DFM) and Design for the Environment (DFE)
- Minimize time to market
- Contain simple (simplified) language
- Just include spec information
- Focus on end product performance
- Include a feedback system on use and problems for future improvement

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- Increase time-to-market
- Keep people out
- Increase cycle time
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- Contain anything that cannot be defended with data

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IPC-2577

PDX

– Quality Assessment

**Sectional Requirements
for Supply Chain
Communication of
Manufacturing Quality
Assessment – Product Data
eXchange (PDX)**

A standard developed by the Product Manufacturing Quality Exchange Task Group (2-15d) of the Supply Chain Communication Subcommittee (2-15) of IPC.

The IPC-2577 standard defines an XML encoding scheme that captures the setting and updating of quality goals, communicating and responding to quality excursions and reporting actual data from manufacturing and repair operations.

Users of this standard are encouraged to participate in the development of future revisions.

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Acknowledgment

Any document involving a complex technology draws material from a vast number of sources. While the principal members of the Product Manufacturing Quality Exchange Task Group (2-15d) of the Supply Chain Communication Subcommittee (2-15) are shown below, it is not possible to include all of those who assisted in the evolution of this standard. To each of them, the members of the IPC extend their gratitude.

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Sectional Requirements for Supply Chain Communication of Manufacturing Quality Assessment – Product Data eXchange (PDX)

Introduction

The IPC-2571 document provides introductory and explanatory information about this standard and includes other elements that are also required or available. The IPC-2571 dictates the required package structure and XML format for information exchange using any of the subsequent IPC-257x standards such as this one (IPC-2577). In any such exchange, a Product Data eXchange package must be defined which contains at a minimum a single pdx.xml file. This file in turn is required to contain a single ProductDataeXchangePackage element, and may contain any number of other elements from this specification. The Product Data eXchange package may optionally contain or refer to related external files (see IPC-2571 documentation).

This standard (IPC-2577) covers the sectional requirements for the exchange of Product Quality information resulting from manufacturing, assembly, test, repair and failure tracking. Quality Metrics are also defined and the actual metric can be exchanged between parties.

1 SCOPE

This standard (IPC-2577) defines an XML encoding scheme that allows business partners to set and update quality goals, communicate and respond to quality excursions, and report actual data from manufacturing and repair operations. Information represented in this standard includes such things as: quality metrics and goals, manufacturing quality results and failure tracking data, parametric data, quality performance, repair detail and corrective actions.

1.1 Focus and intent

This standard facilitates the exchange of manufacturing & repair information between supply chain partners that supports warranty tracking, product excursion containment, and product quality functions.

The generic format requirements are provided in a series of standards focused on printed board manufacturing, assembly, and inspection testing. This standard series consists of a generic standard (IPC-2571) that contains all the general requirements and this quality standard (IPC-2577) as an element inside the IPC-2571. There are four sectional standards that are focused on the XML quality details used to define and report information in the area of quality performance and detailed process information.

1.2 Business Objectives

Any IPC-2577 quality file is composed of a high level element PDX structure (IPC-2571) that contains any of the following IPC-2577 subelements:

QualityMetrics – Defines the different quality performance Metrics and actual measurements,

QualityIssues – Defines the different quality Issues that arose during production,

CorrectiveActions – Defines the different Corrective Actions that address the related issues,

Repair/Failure Analysis – Defines the different instances where failures occurred and the repair steps to correct the issue and/or the disposition.

Listed below are the Main Elements in the Quality Specification. There are four use cases currently defined that address several Quality exchanges. There must be at least one use case defined. Multiple cases can be included in one file. Each case has its unique role so it would be impractical to see all use cases included in one transmission.

1.2.1 Quality Metrics

In this use case scenario, information is exchanged between supply chain partners to set key parameters for the other data exchange scenarios. It defines elements related to the data exchange of performance metrics, which could be collected by product, line, cell, workstation, etc. This scenario allows for actual measurements to be reported against the goals. This scenario is defined as a unidirectional exchange.

Use case: Establish parameters for capturing production volume metrics and communicating the quality codes, values & descriptions. Update the parameters for capturing production volume metrics and quality codes, values & descriptions.

Business Objective: To understand the quality data being transferred between the contracting company and the contractee it is necessary to agree in advance on, the volume measurements will be taken, the level of data to be passed and the content (or values) within the data. The “quality data exchange metrics set-up and actuals” definition allows a contractor to set the data criteria for the contractee. Using this standard the contractor can:

- Establish and update the data volume measurements used to support product production;
- Define the values and description of the quality codes being exchanged from the contractee. These quality codes can be used within any entity of the data being exchanged. Examples of these quality codes would be failure/repair codes, test codes, cross-reference values etc. These quality codes support both production processing and repair processing.

1.2.2 Quality Issues

In this use case scenario, information is exchanged between supply chain partners to communicate production issues. It defines elements related to the data exchange of product non-conformance, or other issues that require resolution. These quality issues could be collected by product, line, cell, workstation, etc. This scenario allows for actual issues to be reported or product service requests (PSRs) to be initiated.

Use Case: Respond to Quality Issues – Symptoms and Problems

Business Objective: To provide bilateral data exchange to communicate and provide feedback resolution for quality issues. This data exchange can be initiated by either the contractor or the contractee and both can play either of the actor roles depending on who is responsible for the corrective action.

1.2.3 Corrective Actions

In this use case scenario, information is exchanged between supply chain partners to communicate a corrective action (or actions) to open issues. It defines elements related to the data exchange of resolution of open quality issues. The corrective action(s) can address the product, line, cell, workstation, employee training, etc. This scenario allows for resolution to reference multiple actual issues that were reported or product service requests (PSRs). This scenario is defined as a unidirectional exchange.

Use Case: Respond to Quality Issues by Correction Actions

Business Objective: To monitor product health to proactively prevent product excursions and drive corrective actions, and to utilize the data to drive continuous improvement and next generation improvements.

The standard is setup to enable the exchange to support various levels of business and product maturity. As an example, data exchange content could vary by production type.

The cross reference of related issues is available to enable a linkage between an issue and the corrective action data. As an example:

- This would permit the tracking of a failure in a manufacturing line to a corrective action / repair from another supplier. i.e. a hard drive reported as the failure cause on a systems integration line could be tracked back to the corrective action/repair record of the hard drive.

1.2.4 Repair/Failure Analysis

In this use case scenario (ProductRepairAndFailureData), repair and failure analysis information is exchanged between business partners. The information may include product related repair and failure analysis details concerning individual product instances. The standard supports test, failure and environmental data, which can be cross-referenced to other supply chain partners.

Use Case: To capture a final disposition, failure analysis, root cause and component usage data from repair providers. Communicate repair and/or failure information about a product to support the control of the repair process and the lowering of the repair costs.

Business Objective: To provide a data exchange to communicate failure and repair data from repair providers. In this standard the data receiver is expecting a data exchange for each repaired item or group of repaired items. This data could include:

- identification of the product (individual or quantity driven);
- disposition of the product;
- failure and repair codes associated with each incident for the product;
- identification of sub-assemblies (or components) repaired or replaced;
- failure and repair codes associated with the sub assemblies;
- test data associated with the failure or repair of the product and/or sub-assembly;
- Cross-reference data for the product (i.e. RMA Number, PO, Master Event Number etc..).

The Repair Quality Data exchange standard supports a flexible ongoing feed of repair and failure data in which the level of data being communicated is negotiated between the company (such as an EMS) requesting the data (contractor) and the repair provider(s) (contractee) performing the failure analysis and repair.

From a manufacturing standpoint this standard can support a production line in which finished products are being integrated to create a new product to be sent to an end customer (e.g. Building a server). As testing is performed on the integrated products any failure data associated with the sub-assembly would be sent to a repair provider contracted to repair the sub-assembly. Any failure or repair quality data captured by the repair provider would be sent to the EMS where aggregation and trend analysis could take place.

This flexible standard can also be used for post customer support. If a customer sends a defective product to a repair provider this standard would allow:

- The customer to send failure or repair information found at the customer site to the repair provider. This could lower cost of the repair to the contractor by providing the repair provider has an understanding of the failure that was found at the customer site.
- Once completing the repair, the repair provider could send quality data about the repair to the EMS.
- The EMS could use the data from the two repair providers to support failure/repair trend analysis. They could also use the data to manage the business relationship with their contracted repair providers.

2 APPLICABLE DOCUMENTS

2.1 Introduction

There are relationships to other standard initiatives. The following documents contain provisions, which, through reference in this text, constitute provisions of this standard. All documents are subject to revision. Parties who make agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the documents. These include the following:

2.1.1 IPC 2500 CAMX Series

The CAMX Series standard (IPC 2500's) describes printed boards and printed board assemblies in various definitions from a graphical representation (CAD), a manufacturing representation (CAM), machine recipes, machine messages, ERP and MES interfaces, Supply Chain communications (PDX).

Please also refer to the IPC-2501 document for introductory and explanatory information about this standard. IPC-2501 also includes other elements that are required or used by this standard which dictates the required package structure and xml format for information exchange using any of the subsequent IPC-25xx standards such as this one. This standard describes message transport mechanisms that are based upon an architecture whereby a single logical middleware server (the Message Broker) exchanges messages among Clients in a Domain.

The Product Data eXchange (PDX) standard (IPC-257x series), is intended for high-level supply chain communication of product definition, product build, and production reporting data.

IPC-T-50	Terms and Definitions for Interconnecting and Packaging Electronic Circuits
IPC-2501	Definition for Web-Based Exchange of XML Data
IPC 2511	Generic Computer Aided Manufacturing Descriptions for Printed Boards and Printed Board Assembly
IPC-2541	Generic Requirements for Electronics Manufacturing Shop-Floor Equipment Communication Messages (CAMX)
IPC-2547	Sectional Requirements for Shop-Floor Equipment Communication Messages (CAMX) for Printed Circuit Board Test, Inspection and Rework
IPC-2571	Generic Requirements for Electronics Manufacturing Supply Chain Communication – Product Data eXchange (PDX)
IPC-2576	Sectional Requirements for Electronics Manufacturing Supply Chain Communication of As-Built Product Data - Product Data eXchange (PDX)

- IPC-2578 Sectional Requirements for Electronics Manufacturing Supply Chain Communication of Bill of Material and Product Design Configuration Data – Product Data eXchange
- IPC-2581 Generic Requirements for Printed Board Assembly Products Manufacturing Description Data and Transfer Methodology

2.1.2 RosettaNet

RosettaNet is dedicated to the development and deployment of standard electronic business interfaces to align the processes between supply chain partners on a global basis. See <http://www.rosettanet.org>

PIP-7C6 Cluster 7 – Manufacturing, Segment 7C: Distribute Product Quality Event Data

2.2 Documentation conventions

The XML file format standard and the XML Schema definition language standard, as defined the by World Wide Web Consortium (W3C), have been adopted by IPC for use in the IPC-2500 series of standards.

In addition to the text based schema notation this document provides graphical representation of the structure of the file format. The XML diagrams are designed to effectively illustrate the structure and cardinality of elements and attributes that make up any IPC-258X file. The notation in the graphics does not provide a complete visualization of the schema definition for the file format, but it does provide a good top down overview. Should there be any conflict between the graphical notation and the schema notation, the authoritative definition is the schema notation.



2.3 Notation

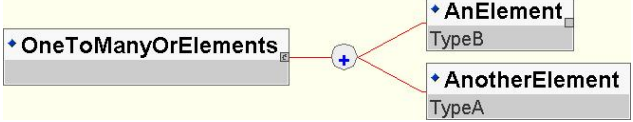
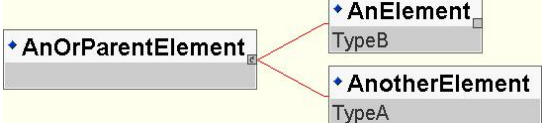
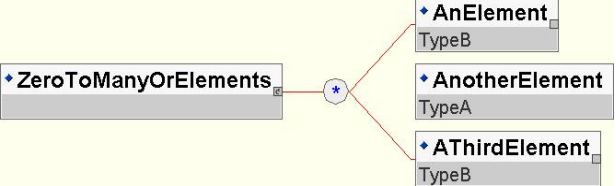
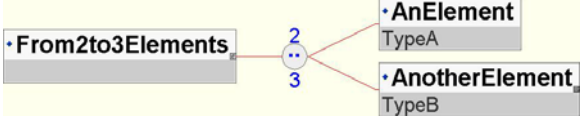
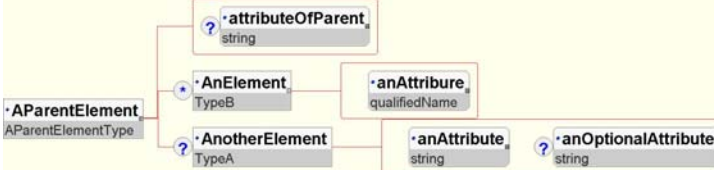
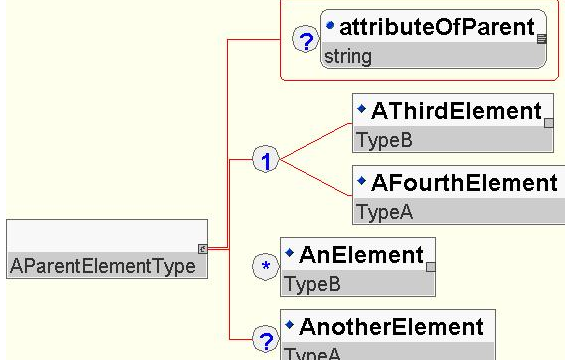
Although the data would be contained in a single file, the file can have different purposes as described in Section 4. The XML schema used for this standard follows the notations set forth by the W3C and is as follows:

- element – Element appears exactly one time
- element ? – Element may appear 0 or 1 time
- element * – Element may appear 0 or more times
- element + – Element may appear 1 or more times

Table 1 provides an overview of the graphical notation used in the document.

Table 1 Graphical Notation Overview

This diagram depicts an element named AnElement that is of type TypeB. There is one attribute, named anAttribute, that is of type double. The attribute is required.	
Example: <AnElement anAttribute="14.44e-3"/> Note that all attribute values must be enclosed in quotes, regardless of type.	
This diagram depicts an element with two attributes. The attribute anAttribute is required. The "?" in the circle indicates that the second attribute, anOptionalAttribute, is optional. Both attributes are of type string.	

<p>Examples:</p> <pre><AnotherElement anAttribute="red" anOptionalAttribute="a string" /> <AnotherElement anAttribute="blue" /></pre>	
<p>The element OneToManyOrElements is the parent of an unordered list of one or more instances of the elements AnElement and AnotherElement. The "+" indicates the occurrence is one to many and the angled lines indicate this is a choice relationship (" ") between the children elements.</p>	 <p>The diagram shows a box labeled "OneToManyOrElements" connected by a line with a "+" in a circle to a choice bubble (a circle with a vertical line). This bubble branches into two lines, each ending in a box: "AnElement TypeB" and "AnotherElement TypeA".</p>
<p>< OneToManyOrParentElement>...</p>	
<p>The absence of an occurrence bubble declares that one and only one occurrence are allowed. The AnOrParentElement can have one of AnElement or AnotherElement as a child element.</p>	 <p>The diagram shows a box labeled "AnOrParentElement" connected by a line to a choice bubble (a circle with a vertical line). This bubble branches into two lines, each ending in a box: "AnElement TypeB" and "AnotherElement TypeA".</p>
<p>The '*' in the occurrence bubble indicates the choice is from 0 to many.</p>	 <p>The diagram shows a box labeled "ZeroToManyOrElements" connected by a line with a "*" in a circle to a choice bubble (a circle with a vertical line). This bubble branches into three lines, each ending in a box: "AnElement TypeB", "AnotherElement TypeA", and "AThirdElement TypeB".</p>
<p>This diagram depicts an element, From2to3Elements. The element has no type and no attributes. It can have 2 to 3 sub-elements of either AnElement or AnotherElement.</p>	 <p>The diagram shows a box labeled "From2to3Elements" connected by a line to an occurrence bubble (a circle with a vertical line and numbers "2" and "3"). This bubble branches into two lines, each ending in a box: "AnElement TypeA" and "AnotherElement TypeB".</p>
<p>This diagram depicts an element, AParentElement, of type AParentElementType. This element has one attribute, attributeOfParent, which is optional. The lines with square corners indicate that occurrences of AnElement and AnotherElement must appear in the order by the illustration on the right where the top element is addressed first and AnotherElement is addressed secondly.</p>	 <p>The diagram shows a box labeled "AParentElement" with "AParentElementType" below it. It has an attribute "attributeOfParent" (string) with a "?" in a circle. It is connected by lines with square corners to two child boxes: "AnElement TypeB" and "AnotherElement TypeA". "AnElement" has an attribute "anAttribute" (qualifiedName) and "AnotherElement" has an attribute "anAttribute" (string) and an optional attribute "anOptionalAttribute" (string) with a "?" in a circle.</p>
<p>This diagram depicts a type, AParentElementType, that contains a sequence starting with one of AThirdElement or AFourth element followed by 0-n AnElement and an optional final AnotherElement.</p>	 <p>The diagram shows a box labeled "AParentElementType". It is connected by a line to an attribute "attributeOfParent" (string) with a "?" in a circle. It is also connected by a line to a sequence bubble (a circle with a vertical line and a "1"). This bubble branches into two lines, each ending in a box: "AThirdElement TypeB" and "AFourthElement TypeA". Below this, it is connected by a line to an occurrence bubble (a circle with a vertical line and a "*") which branches into two lines, each ending in a box: "AnElement TypeB" and "AnotherElement TypeA". The "AnotherElement" box has a "?" in a circle next to it.</p>

3 GRAPHICAL REPRESENTATION AND XML STRUCTURE

XML Document Type Definitions (DTDs) of the elements in this standard are contained in IPC2571. A Document Type Definition (DTD) is a standard for describing the structure of information. A DTD describes a standard for a whole class of documents. The standard describes the possible arrangement of tags and text in a valid XML-document (or message). A DTD might also be viewed as an agreement on a common vocabulary for a particular application domain (like the Electronics Manufacturing) that involves exchanging documents or messages.

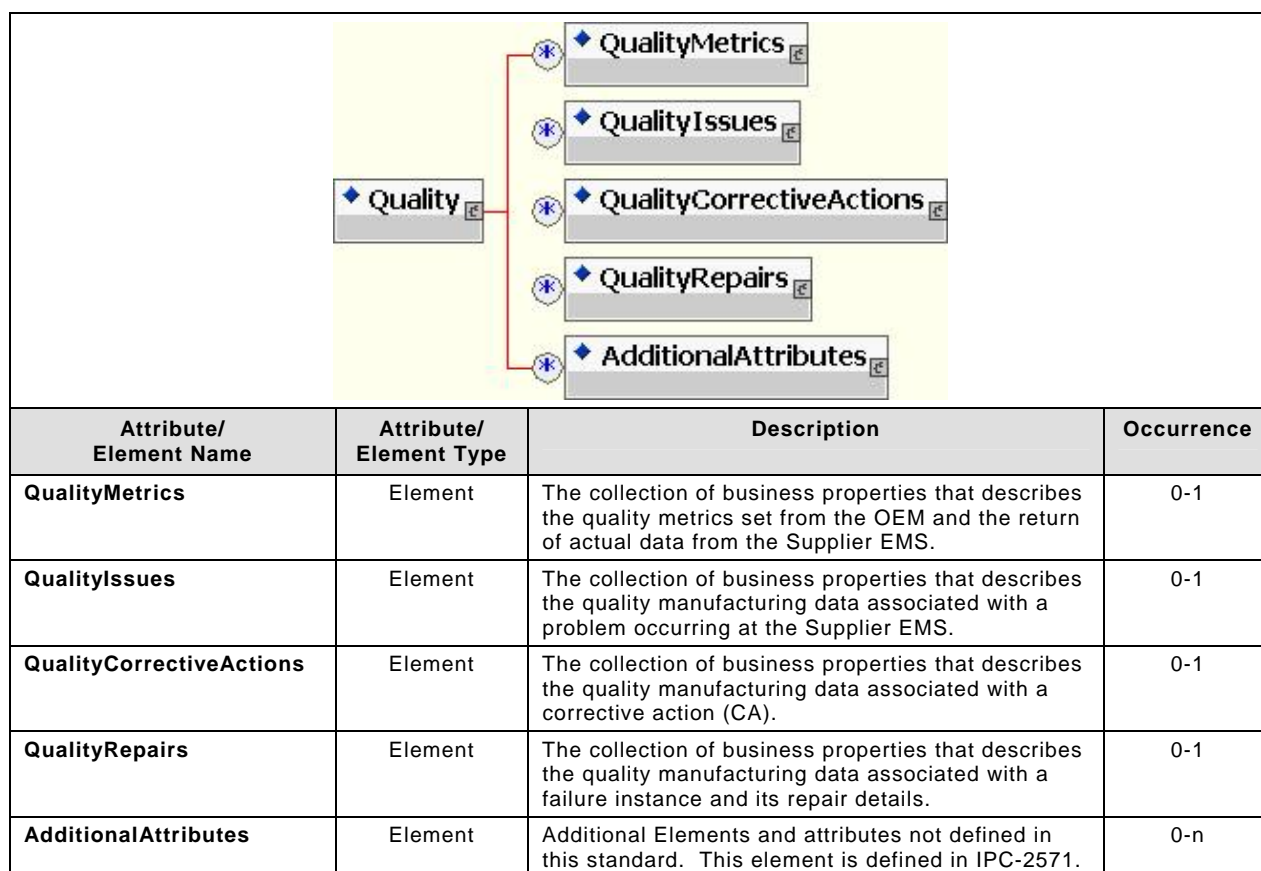
3.1 Quality – The Quality Tree

This is the first major element after the ProductDataeXchange that defines the quality tree of quality definition structures. Sub-elements under Quality define the individual four scenarios, as described earlier, for quality reporting and Supply Chain Communications.

3.1.1 XML Glossary – Quality Tree

3.1.1.1 Element: Quality

Description: The collection of business properties that describes the quality data sent from the Repair Provider to the Supply Chain including the supply chain from and to partners.

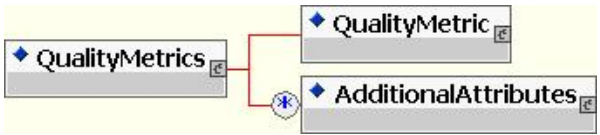


3.2 Quality – Quality Metrics

3.2.1 XML Glossary – Quality Metrics

3.2.1.1 Element: QualityMetrics

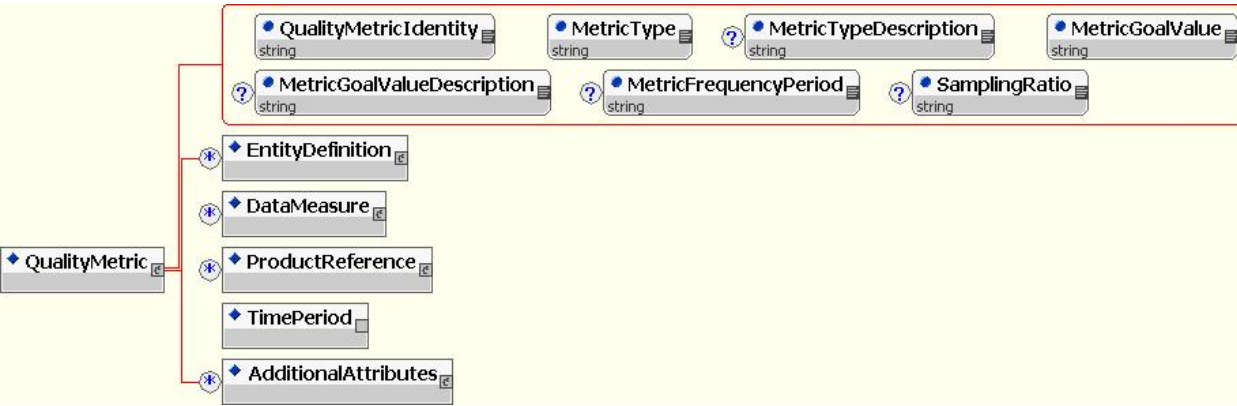
Description: Defines a group of quality metric goals and its volume data for the defined metric.



Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
QualityMetric	Element	Defines a specific quality metric goal and can contain recorded volume data.	1-n
AdditionalAttributes	Element	Additional Elements and attributes not defined. This element is defined in IPC-2571.	0-n

3.2.1.2 Element: QualityMetric

Description: Defines the metric name and parameters for capturing quality goals and recorded volume data.

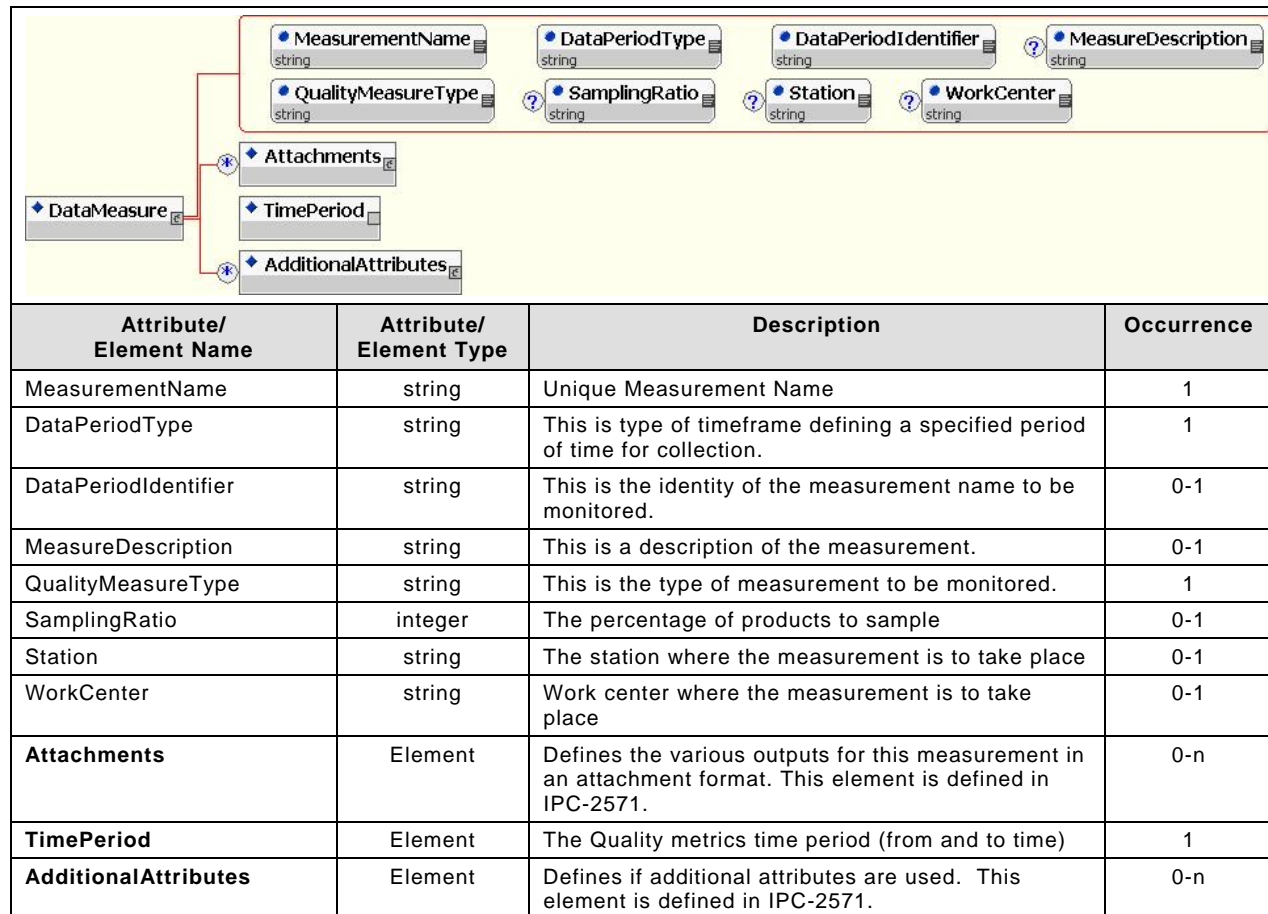


Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
QualityMetricIdentity	string	The identity of the metric to be collected at the current entity or product.	1
MetricType	string	The metric type to be collected at the current entity	1
MetricTypeDescription	string	Metric type description	0-1
MetricGoalValue	string	The metric goal value associated with the metric type	1
MetricGoalValueDescription	string	Metric goal value description value associated with the metric type	0-1
MetricFrequencyPeriod	string	The period of time that this Metric goal is slated to be used. Examples are Quarterly, monthly, weekly, daily, per shift, etc.	0-1
Sampling Ratio	integer	The percentage of products to sample at a time.	0-1
EntityDefinition	Element	Defines if data will be captured or not at certain entity level. Also defines the entity that the quality codes defined will be associated	0-1

DataMeasure	Element	Defines the measurement name and parameters for capturing quality volume data	0-n
ProductReference	Element	Defines the measurement name and parameters for capturing quality volume data	0-1
TimePeriod	Element	The Quality metrics time period (from and to time)	1
AdditionalAttributes	Element	Defines if additional attributes are used. This element is defined in IPC-2571.	0-n

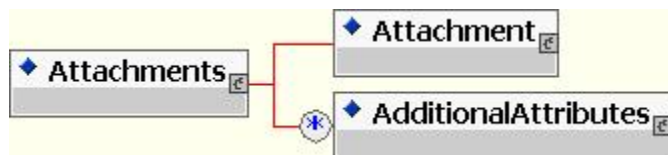
3.2.1.3 Element: DataMeasure

Description: Defines the measurement name and parameters for capturing quality volume data.



3.2.1.4 Element: Attachments

Description: Defines the various outputs for this measurement in an attachment format. This element is defined in IPC-2571.



3.2.1.5 Element: TimePeriod

Description: The segment of time with a defined start and end.

Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
beginDateTime.DateTime Stamp	dateTime	Start date-time of data parameters	1
endDateTime.DateTime Stamp	dateTime	End date-time of data parameters	0-1
plantShift	string	Name of a plant's shift timeframe.	0-1

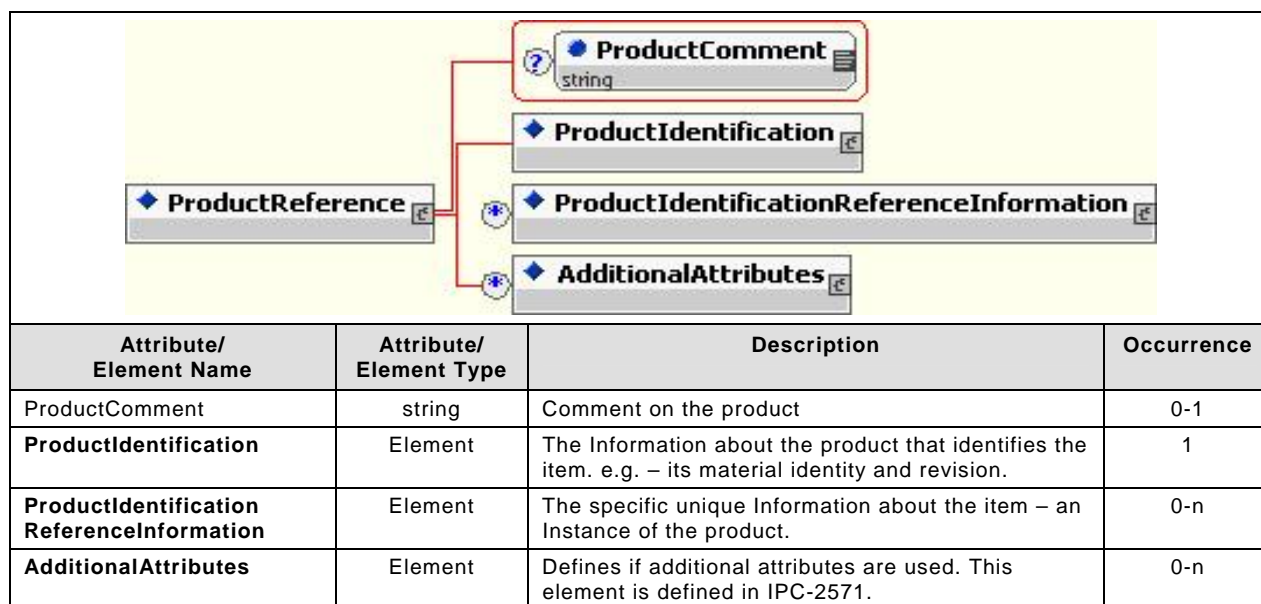
3.2.1.6 Element: EntityDefinition

Description: Defines if data will be captured or not at certain entity level. Also defines the entity that the metrics as defined will be associated.

Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
EntityName	string	Defines the entity at which data should be captured (examples are Line, Cell, Category)	0-1
EntityComment	string	Comment or description about the Entity	0-1
Station	string	The station where the measurement is to take place	0-1
WorkCenter	string	Work center where the measurement is to take place or has taken place.	0-1
AdditionalAttributes	Element	Additional Elements and attributes not defined. This element is defined in IPC-2571.	0-n

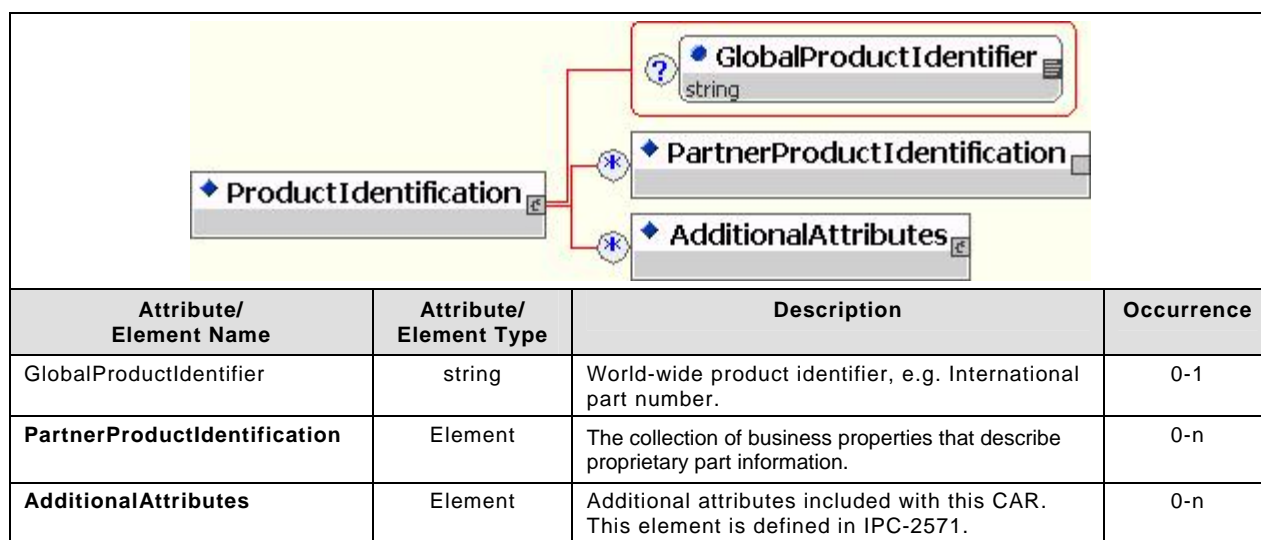
3.2.1.7 Element: ProductReference

Description: The information that describes a product that was defined in the Quality Metric. Defines the product which the volume measures and/or quality metrics are being created for.



3.2.1.8 Element: ProductIdentification

Description: The Information about the product that identifies the item e.g. its material identity and revision.



3.2.1.9 Element: PartnerProductIdentification

Description: The collection of business properties that describe proprietary part information.

Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
GlobalPartnerClassificationCode	string	Code identifying a partner's function in the supply chain. Recommend values are found in Appendix A.	1
ProprietaryProductIdentifier	string	Company product identifier, e.g. the MRP part number.	1
revisionIdentifier	string	The revision letter of the ProprietaryProductIdentifier	0-1

3.2.1.10 Element: ProductIdentificationReferenceInformation

Description: The specific unique Information about the item – an Instance of the product.

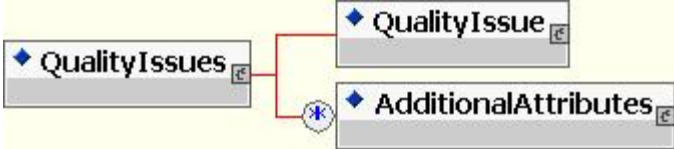
Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
manufacturingDateCode	string	The manufacturers date code on the item. This could also be the LOT number	0-1
ProprietarySerialIdentifier	string	Serial number on the material	0-1

3.3 Quality – Quality Issues

3.3.1 XML Glossary –(Quality Issues - Exceptions/Incidents)

3.3.1.1 Element: QualityIssues

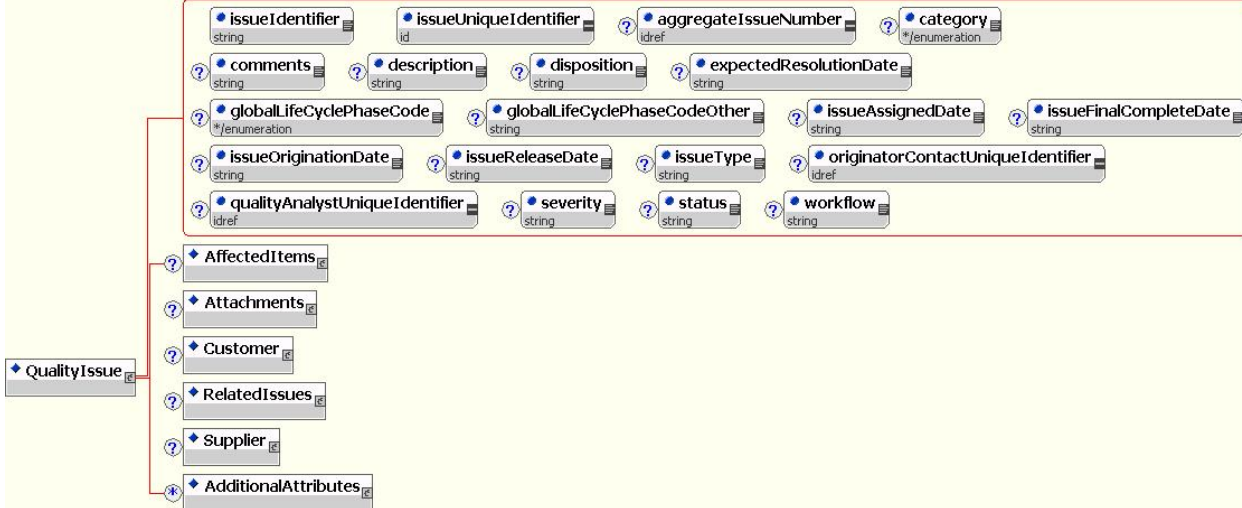
Description: The collection of business properties that describes the quality manufacturing data associated with a problem occurring at the Supplier EMS.



Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
QualityIssue	Element	The collection of business properties that describes the quality manufacturing data associated with an Issue instance.	0-1
AdditionalAttributes	Element	Additional Elements and attributes not defined. This element is defined in IPC-2571.	0-n

3.3.1.2 Element: QualityIssue

Description: The collection of business properties that describes the quality manufacturing data associated with an Issue instance.

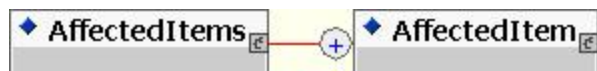


Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
issueIdentifier	string	The Identity of the Issue. Typically, this is a tracking identity assigned at time of occurrence.	1
issueUniqueIdentifier	ID	The Unique Identity of the Issue. Typically, this is a tracking identity assigned at time of occurrence plus a unique code such as plant or unique location.	1
aggregateIssueNumber	string	This issue (and possibly others) are aggregated into this issue number. Example: Several reported symptoms are similar but the root caused is explained in this aggregated Issue Number.	0-1

category	string	Category defined by the issuer, for example: Customer Complaint, Audit – External, Preventive Action, Aggregated Issue, Root cause.	0-1
comments	string	Comments	0-1
description	string	Description of the Issue	0-1
disposition	string	Disposition of the Issue	0-1
expectedResolutionDate	string	Date and time the CAR was resolved.	0-1
globalLifeCyclePhaseCode	(Design Preliminary Prototype Pilot Conditional Production Pending Inactive Unqualified Disqualified Obsolete Other)	Lifecycle of item at the time it was identified in this issue.	0-1
globalLifeCyclePhaseCode Other	string	If the above globalEngineeringChangeStatusCode attribute is set to "Other", use this attribute to provide a more descriptive value. If the above globalEngineeringChangeStatusCode attribute is NOT set to "Other", LEAVE THIS FIELD BLANK.	0-1
issueAssignedDate	string	Date and time the CAR was assigned.	0-1
issueFinalCompleteDate	string	Date and time the CAR was completed.	0-1
issueOriginationDate	string	Date and time the CAR was issued.	0-1
issueReleaseDate	string	Date and time the CAR was released.	0-1
issueType	string	Type of issue. (Engineering Change Order, ECR, Deviation, etc.)	0-1
originatorContactUniqueIdentifier	IDREF	The originator contact information. Ties into Contact Element in IPC-2571.	0-1
qualityAnalystUniqueIdentifier	IDREF	The quality analyst information. Ties into Contact Element in IPC-2571.	0-1
severity	string	The level of severity or priority.	0-1
status	string	Issue status. (Examples: New, Open, Closed)	0-1
workflow	string	Identifier of the workflow assigned to this change	0-1
AffectedItems	Element	Items affected by this Issue. This element is defined in IPC-2578.	0-n
Attachments	Element	Attachments included with this Issue. This element is defined in IPC-2571.	0-n
Customer	Element	The collection of business properties that describes the Customer (OEM).	0-n
RelatedIssues	Element	Quality Issues related to this Issue. This allows for a grouping of similar issues to be summarized as one issue for Corrective Action resolution.	0-n
Supplier	Element	The collection of business properties that describes the Supplier (EMS).	0-n
AdditionalAttributes	Element	Additional attributes included with this Issue. This element is defined in IPC-2571.	0-n

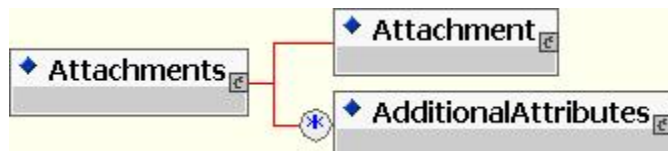
3.3.1.3 Element: AffectedItems

Description: Items affected by this CAR. This element is defined in IPC-2578.




3.3.1.4 Element: Attachments

Description: Attachments included with this CAR. This element is defined in IPC-2571.




3.3.1.5 Element: Customer

Description: The collection of business properties that describes the Customer (OEM).

			
Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
BusinessDescription	Element	The business identity that describes Information about the business.	1


3.3.1.6 Element: BusinessDescription

Description: The business identity that describes Information about the business.

			
Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
businessName	string	The name of a business entity.	0-1
GlobalBusinessIdentifier	string	Defines the company that is sending the file. DUNS	0-1
GlobalSupplyChainCode	string	Code identifying the supply chain for the partner's function. Recommend values are found in Appendix A.	1
PartnerBusinessIdentification	Element	The collection of business properties that allow for the proprietary identification of a business entity.	0-n

3.3.1.7 Element: PartnerBusinessIdentification


Description: The partner business information that describes Information about the partner.



Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
ProprietaryBusinessIdentifier	string	The company identity	1
ProprietaryDomainIdentifier	string	A descriptor that is used to categorize an organization or business entity that is in the ProprietaryBusinessIdentifier.	1
ProprietaryIdentifierAuthority	string	A unique name that identifies an organization or business entity that is responsible for managing one or more lists of identifiers.	0-1

3.3.1.8 Element: RelatedIssues

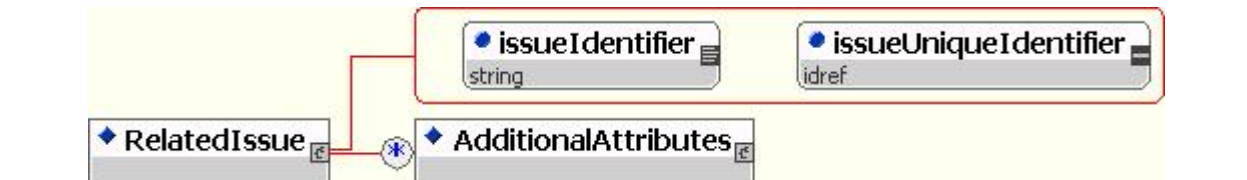
Description: The group that describes one or more quality manufacturing issues occurring at the Supplier EMS.



Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
RelatedIssue	Element	The connector to the data associated with an Issue instance.	1-n

3.3.1.9 Element: RelatedIssue


Description: The collection of business properties that describes the quality manufacturing data associated with a problem occurring at the Supplier EMS.



Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
issueIdentifier	string	The Identity of the Issue. Typically, this is a tracking identity assigned at time of occurrence.	1
issueUniqueIdentifier	IDREF	The Unique Identity of the Issue. Typically, this is a tracking identity assigned at time of occurrence plus a unique code such as plant or unique location.	1

3.3.1.10 Element: Supplier

Description: The collection of business properties that describes the Supplier (EMS).

			
Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
BusinessDescription	Element	The business identity that describes Information about the business. See 3.3.1.6	1

3.4 Quality – Corrective Action

3.4.1 XML Glossary – (Corrective Action standard)

3.4.1.1 Element: QualityCorrectiveActions

Description: The collection of business properties that describes the quality manufacturing data associated with a problem occurring at the Supplier EMS.

Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
QualityCorrectiveAction	Element	The collection of business properties that describes the quality manufacturing data associated with an Issue instance.	0-1
AdditionalAttributes	Element	Additional Elements and attributes not defined. This element is defined in IPC-2571.	0-n

3.4.1.2 Element: QualityCorrectiveAction

Description: The collection of business properties that describes the quality manufacturing data associated with a Corrective Action that typically references related issues.

Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
CARIdentifier	string	The Identity of the Corrective Action request. Typically, this is a tracking identity assigned at the time the correction action is established.	1

CARUniqueIdentifier	ID	The Unique Identity of the Corrective Action request. Typically, this is a unique tracking identity assigned at time the correction action is established plus a unique code such as plant or unique location.	1
CARAssignedDate	string	Date and time the CAR was assigned	0-1
CARAuditResult	string	Audit process result. Example setting for an audit result is Pass/Fail. An incoming problem is audited and the result is specified.	0-1
CARFinalCompleteDate	string	Date and time the CAR was completed	0-1
CAROriginationDate	string	Date and time the CAR was originated	0-1
CARPlannedAuditDate	string	Date and time the Audit is planned to be performed.	0-1
CARReleaseDate	string	Date and time the CAR was released	0-1
CARType	string	Type of corrective action. (Engineering Change Order, ECR, Deviation, etc.)	0-1
category	string	Category of corrective action (product, training, process, software, etc.)	0-1
comments	string	Comments	0-1
description	string	Description of the corrective action.	0-1
globalLifeCyclePhaseCode	(Design Preliminary Prototype Pilot Conditional Production Pending Inactive Unqualified Disqualified Obsolete Other)	Lifecycle of the item.	0-1
globalLifeCyclePhaseCode Other	string	If the above globalEngineeringChangeStatusCode attribute is set to "Other", use this attribute to provide a more descriptive value. If the above globalEngineeringChangeStatusCode attribute is NOT set to "Other", LEAVE THIS FIELD BLANK.	0-1
rootCauseAnalysis	string	The root cause of the problem. For example, when there is a problem, engineers analyze why the problem occurred, all the way to the origin (root) of the problem. The information about their methods can be entered in this field.	0-1
originatorContactUnique Identifier	IDREF	The originator contact information. This ties into Contact Element in IPC-2571.	0-1
preventiveAction	string	A proactive action to prevent the problem from happening again in the future.	0-1
proprietaryProductFamily	string	Product line(s) that the item belongs to	0-1
qualityAdministratorUnique Identifier	IDREF	The quality administrator information. This ties into Contact Element in IPC-2571.	0-1
reason	string	Reason for creating this CAR.	0-1
Status	string	CAR status. Examples: New, Open, Awaiting-Approval, Rejected, or Closed	0-1
Workflow	string	Identifier of the workflow assigned to this change	0-1
AffectedItems	Element	Items affected by this CAR. This element is defined in IPC-2578.	0-n
Approvers	Element	Approvers of this CAR. This element is defined in IPC-2578.	0-n
Attachments	Element	Attachments included with this CAR. This element is defined in IPC-2571.	0-n

Customer	Element	The collection of business properties that describes the Customer (OEM). See 3.3.1.5 for further definition.	0-n
History	Element	History associated with this CAR. This element is defined in IPC-2578.	0-n
RelatedIssues	Element	Quality Issues related to this CAR. See 3.3.1.8 for further definition.	0-n
Supplier	Element	The collection of business properties that describes the Supplier (EMS). See 3.3.1.10 for further definition.	0-n
AdditionalAttributes	Element	Additional attributes included with this CAR. This element is defined in IPC-2571.	0-n

3.4.1.3 Element: AffectedItems

Description: Items affected by this CAR. This element is defined in IPC-2578.

3.4.1.4 Element: Approvers

Description: Approvers of this CAR. This element is defined in IPC-2578.

3.4.1.5 Element: History

Description: History associated with this CAR. This element is defined in IPC-2578.

3.4.1.6 Element: Attachments

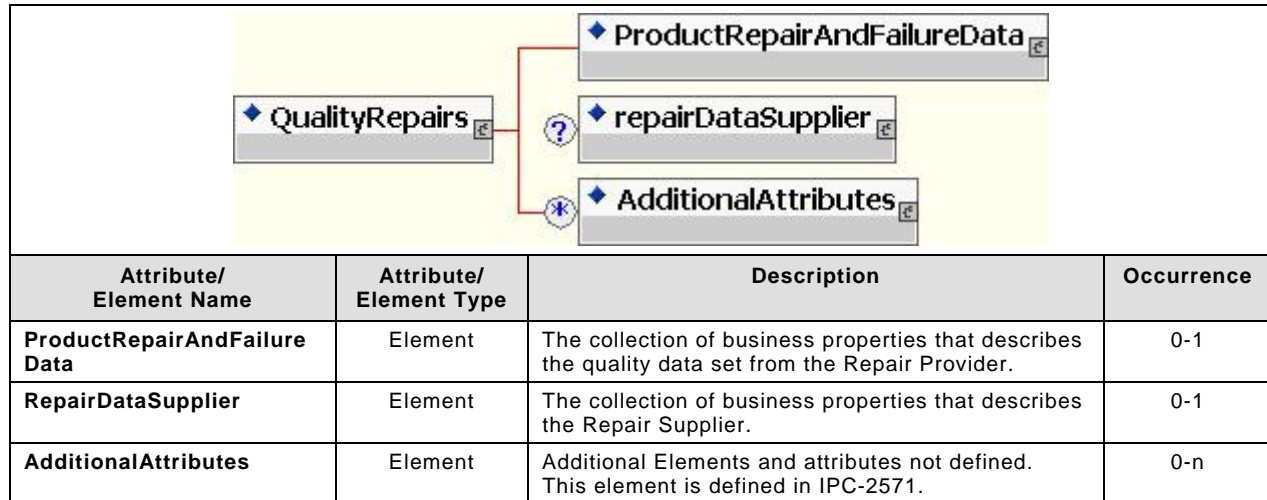
Description: Attachments included with this CAR. This element is defined in IPC-2571.

3.5 Proactive Quality Repair Data exchange standard

3.5.1 XML Glossary – Quality Repair Data exchange standard

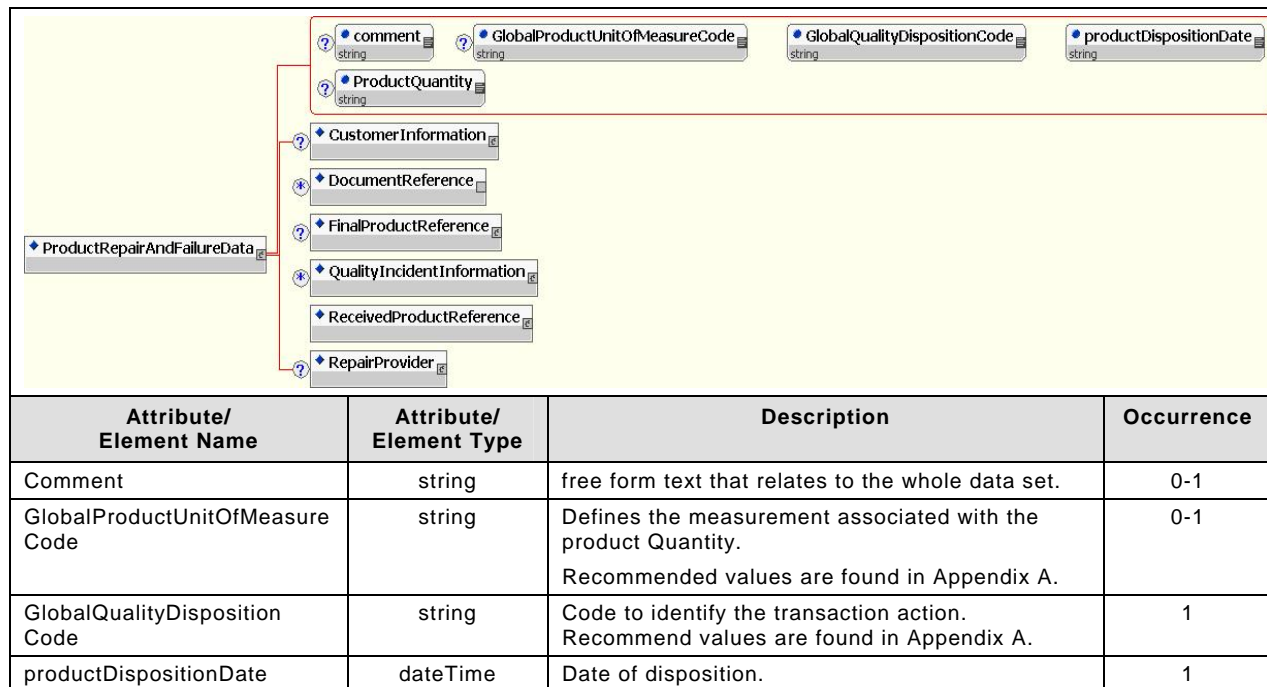
3.5.1.1 Element: QualityRepairs

Description: The collection of business properties that describes one or more quality repairs. Elements defined in this message are resolved with RosettaNet's PIP 7C6.



3.5.1.2 Element: ProductRepairAndFailureData

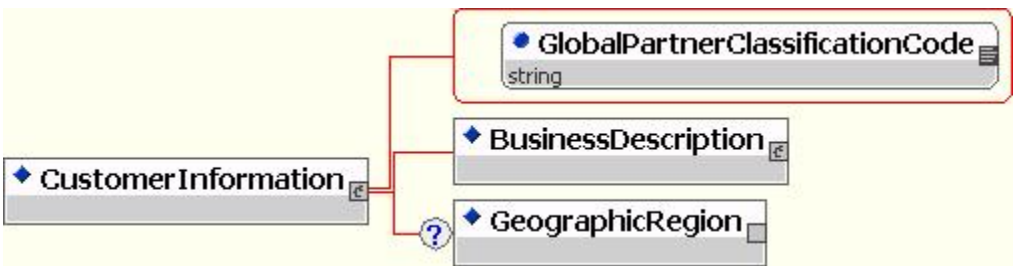
Description: The collection of business properties that describes the quality data set from the Repair Provider.



productQuantity	Integer	The quantity of material represented by the disposition. In most cases this value should be 1. If value is more than one then fields such as serial number should remain blank	0-1
CustomerInformation	Element	The collection of business properties that describe an end user.	0-1
DocumentReference	Element	A reference number used as a way to identifying the document containing the failure information.	0-n
FinalProductReference	Element	The key to the material item being repaired	0-1
QualityIncidentInformation	Element	Repair and/or Failure codes associated with the item.	0-n
ReceivedProductReference	Element	The information that describes a product that was received from outside services.	1
RepairProvider	Element	The business identity that describes a business that performed a repair function in the supply chain.	0-1

3.5.1.3 Element: CustomerInformation


Description: The collection of business properties that describe an end user.



Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
GlobalPartnerClassificationCode	string	Code identifying a partner's function in the supply chain. Recommend values are found in Appendix A.	1
BusinessDescription	Element	The business identity that describes Information about the business. See 3.3.1.6	1
GeographicRegion	Element	The collection of business properties that reflects multiple countries of choice or a specified region.	0-1

3.5.1.4 Element: GeographicRegion

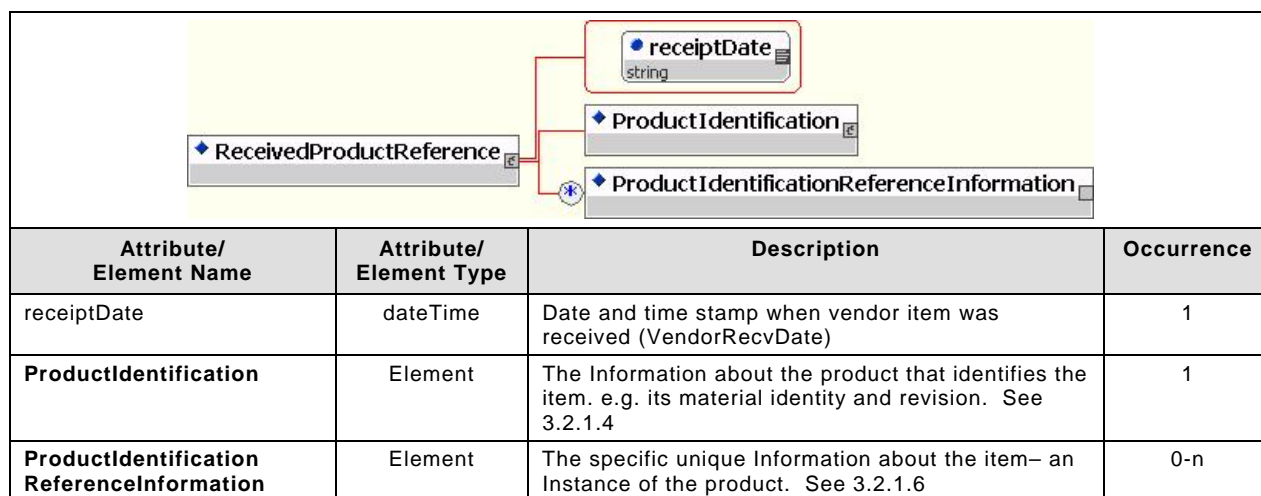
Description: The collection of business properties that reflects multiple countries of choice or a specified region.



Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
GlobalCountryCode	string	Code identifying the two character country code specified in ISO 3166-1993.	0-n
GlobalGeographicRegionCode	string	The code used to denote the geographic region. Recommend values are found in Appendix A.	0-1

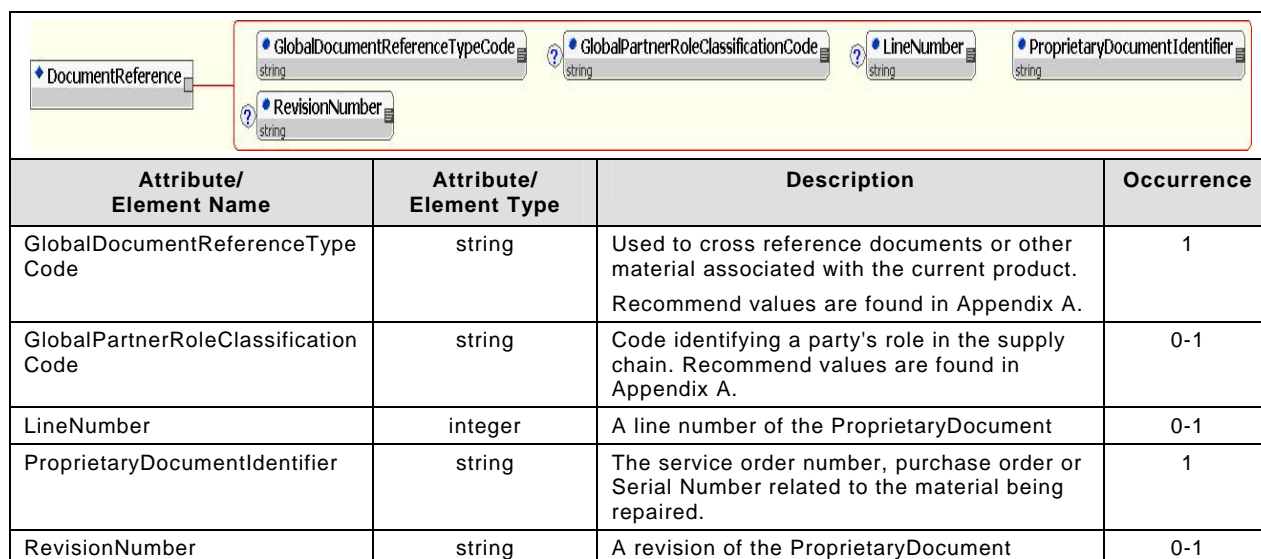
3.5.1.5 Element: ReceivedProductReference

Description: The information that describes a product that was received from outside services.



3.5.1.6 Element: DocumentReference

Description: A reference number used as a way to identifying the document containing the failure information.



3.5.1.7 Element: FinalProductReference

Description: The key to the material item being repaired.

Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
ProductIdentification	Element	The Information about the product that identifies the item. I.e. – its material identity and revision. See 3.2.1.4	1
ProductIdentificationReferenceInformation	Element	The specific unique Information about the item– an Instance of the product. See 3.2.1.6	0-n

3.5.1.8 Element: QualityIncidentInformation

Description: Repair and/or Failure codes associated with the item.

Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
IncidentNumber	string	Identifies a unique incident for the “event” of this material coming through the repair process. The incident number will allow the codes identifying the failure to be linked to the codes that identify the repair	1
incidentDescription	string	The description of an incident	0-1
IncidentSequenceNumber	string	Allows for additional instances within an incident number	0-1
ComponentRepairData	Element	A repeating set showing the components that were processed as part of the repair.	0-n
IncidentDetail	Element	Repair and/or Failure detail associated with the incident.	0-1
TestInformation	Element	These are tests related to the component Code failure or repair.	0-n

3.5.1.9 Element: IncidentDetail

Description: Repair and/or Failure detail associated with the incident. You can choose to enter a Repair or Failure detail associated with the incident

Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
eventDate	dateTime	Date and time that the incident was recorded	0-1
IncidentCodeValue Description	string	Description about the Incident code (Unit Failure Code or Repair Code).	0-1
OperatorIdentifier	string	Identifies the Operator who logged the Incident failure code or repair code.	0-1
workCenter	string	The work center where the failure or repair incident took place.	0-1
FailureEvent (choice)	Element	Failure detail associated with the incident.	0-1
RepairEvent (choice)	Element	Repair detail associated with the incident.	0-1

3.5.1.10 Element: FailureEvent (choice)

Description: Repair and/or Failure codes associated with the item.

Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
GlobalFailureTypeCodes	string	Indicates if the item code value for the item is a failure code or repair code. Also identifies if it is a primary or secondary code. These codes are to be worked out between the repair provider/supplier and the company collecting the quality data. Recommend values are found in Appendix A.	0-1
incidentFailureCodeValue (Unit Fail Code)	string	Failure code related to the item. The values put in this field are prearranged between the repair provider/supplier and the company collecting the quality data.	0-1

3.5.1.11 Element: RepairEvent (choice)

Description: Repair and/or Failure codes associated with the item.

Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
GlobalFailureTypeCodes	string	Indicates if the item code value for the item is a failure code or repair code. Also identifies if it is a primary or secondary code. These codes are to be worked out between the repair provider/supplier and the company collecting the quality data. Recommend values are found in Appendix A.	0-1
incidentFailureCodeValue (Unit Fail Code)	string	Repair code related to the item. The values put in this field are prearranged between the repair provider/supplier and the company collecting the quality data.	0-1

3.5.1.12 Element: TestInformation

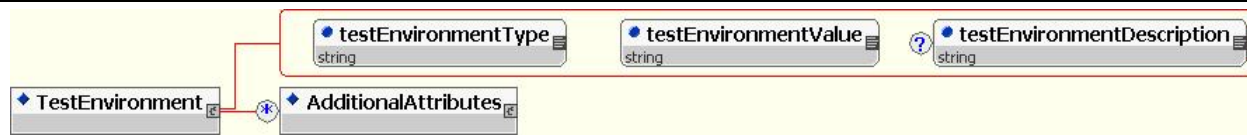
Description: These are tests related to the component Code failure or repair.

Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
comment	string	Free form textual comment attached to the ItemTestGroup.	0-1
isTestPass	string	Flag Indicating if the test passed or failed Value "Y" = Test Passed Value "N" = Test Failed	0-1
OperatorIdentifier	string	Identifies the Operator who performed the test.	0-1
workCenter	string	The work center where the failure or repair incident took place.	0-1
TestEnvironment	Element	Description of the test environment.	0-n
TestLocation	Element	Properties used to identify the specific location and resources used to conduct a defined cycle or steps or measurements required to confirm a result.	0-1
TestName	Element	Test names related to the component code failure or repair.	0-1

TestResultInformation	Element	Properties that describe the specific outcome of a defined cycle of steps or measurements required to confirm a result or event.	0-n
TimePeriod	Element	Time frame that the test(s) took place within. See 3.2.1.4	1

3.5.1.13 Element: TestEnvironment

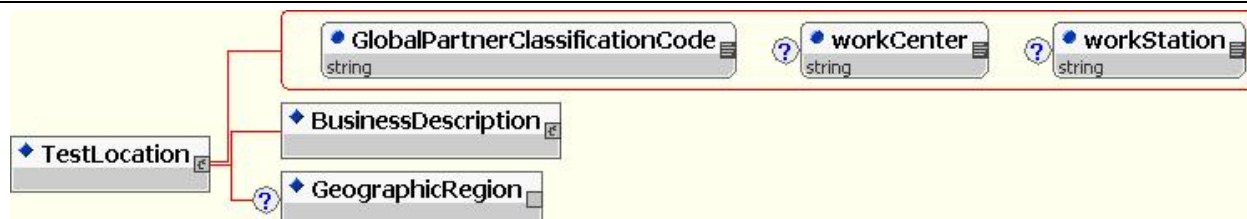
Description: The collection of business properties used to identify the nature, circumstances, conditions and / or parameters in which a defined cycle of steps or measurements is conducted.



Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
TestEnvironmentType	string	A proprietary identifier that specifies the conditions and circumstances in which a defined cycle of steps or measurements is conducted.	1
TestEnvironmentValue	string	A proprietary identifier that specifies the parameters in which a defined cycle of steps or measurements is conducted.	1
TestEnvironmentDescription	string	Free form text that describes the conditions, circumstances and / or parameters in which a defined cycle of steps or measurements is conducted.	0-1
AdditionalAttributes	Element	Additional Elements and attributes not defined. This element is defined in IPC-2571.	0-n

3.5.1.14 Element: TestLocation

Description: The collection of business properties used to identify the specific location and resources used to conduct a defined cycle or steps or measurements required to confirm a result or event.



Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
GlobalPartnerClassification Code	string	Code identifying a partner's function in the supply chain. Recommend values are found in Appendix A.	1
workCenter	string	The work center where the test took place.	0-1
workStation	string	The work station where the test took place.	0-1
BusinessDescription	Element	A reference that identifies who performed the test. Identifies name and location. See 3.3.1.6	1
GeographicRegion	Element	The collection of business properties that reflects multiple countries of choice or a specified region. See 3.5.1.4	0-1

3.5.1.15 Element: TestName

Description: These are test names related to the component code failure or repair.

Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
detail	string	Free form description containing all attributes of the program or product.	0-1
primary	string	The basic attributes that describe a program or product.	0-1
summary	string	Description containing only the most important attributes of a product or program.	0-1

3.5.1.16 Element: TestResultInformation

Description: The collection of business properties that describe the specific outcome of a defined cycle of steps or measurements required to confirm a result or event.

Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
testResult	string	Describes the test result.	0-1
testResultDate	dateTime	Date and time of the test result	0-1
testResultDetail	Element	Defines the test result	0-n

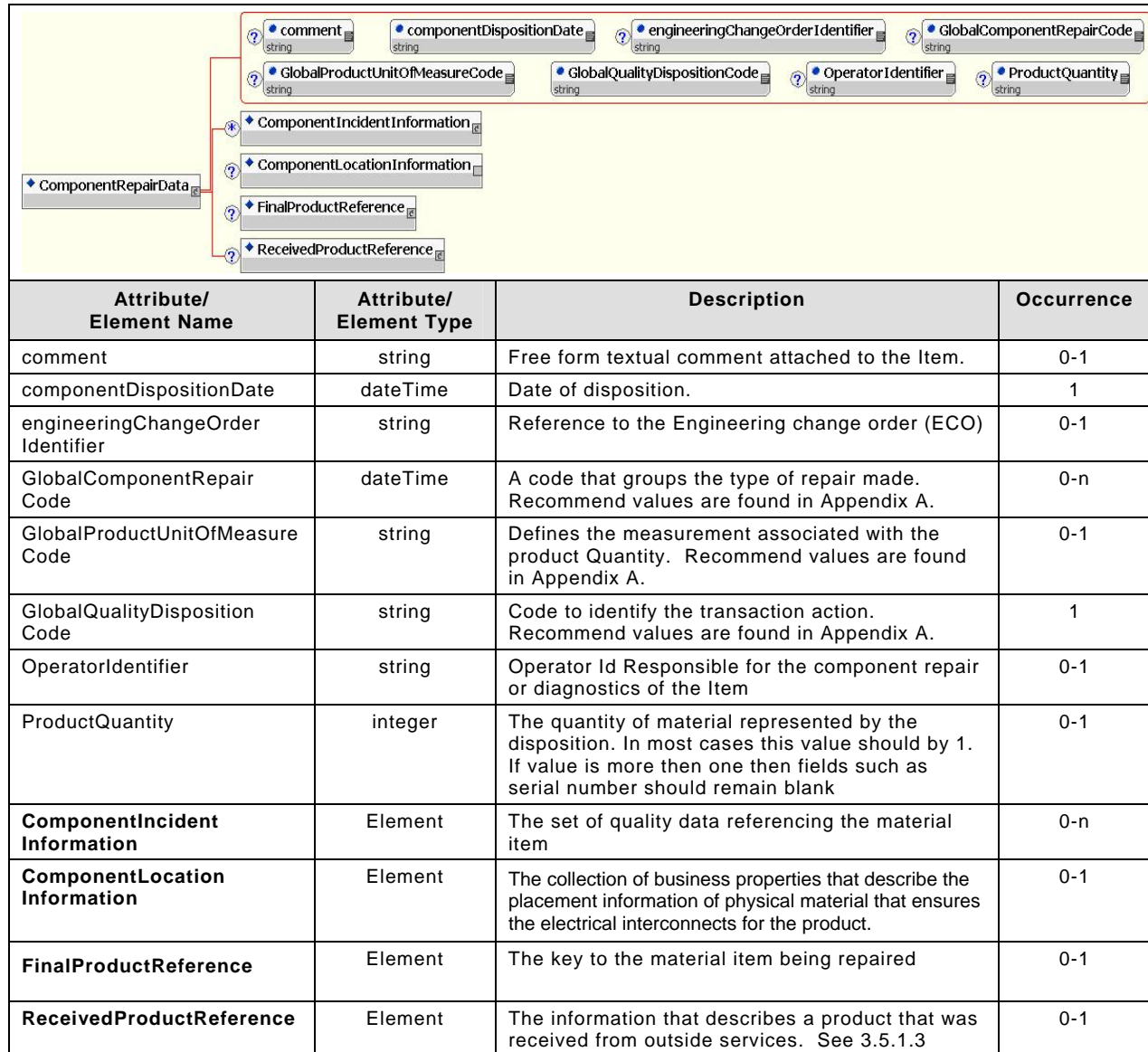
3.5.1.17 Element: testResultDetail

Description: Defines the test result.

Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
Attachment	Element	Attachments referencing the test result.	0-n

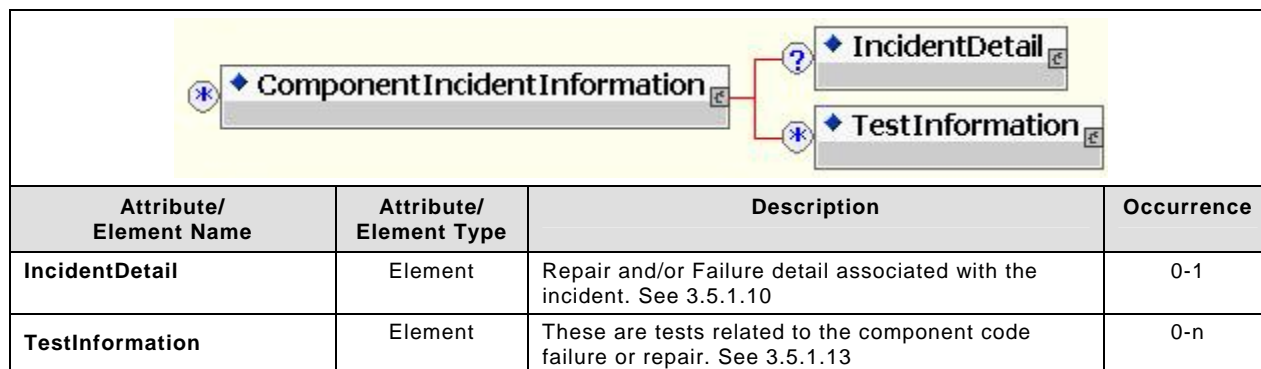
3.5.1.18 Element: ComponentRepairData

Description: A repeating set showing the components that were processed as part of the repair.



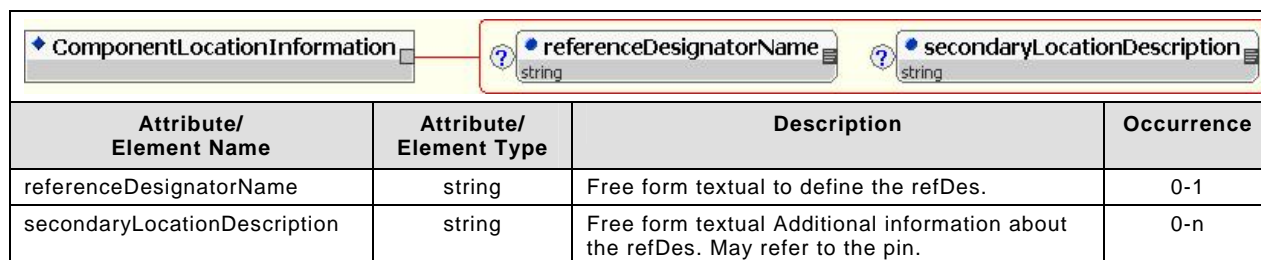
3.5.1.19 Element: ComponentIncidentInformation

Description: The collection of business properties that describe the placement information of physical material that ensures the electrical interconnects for the product.



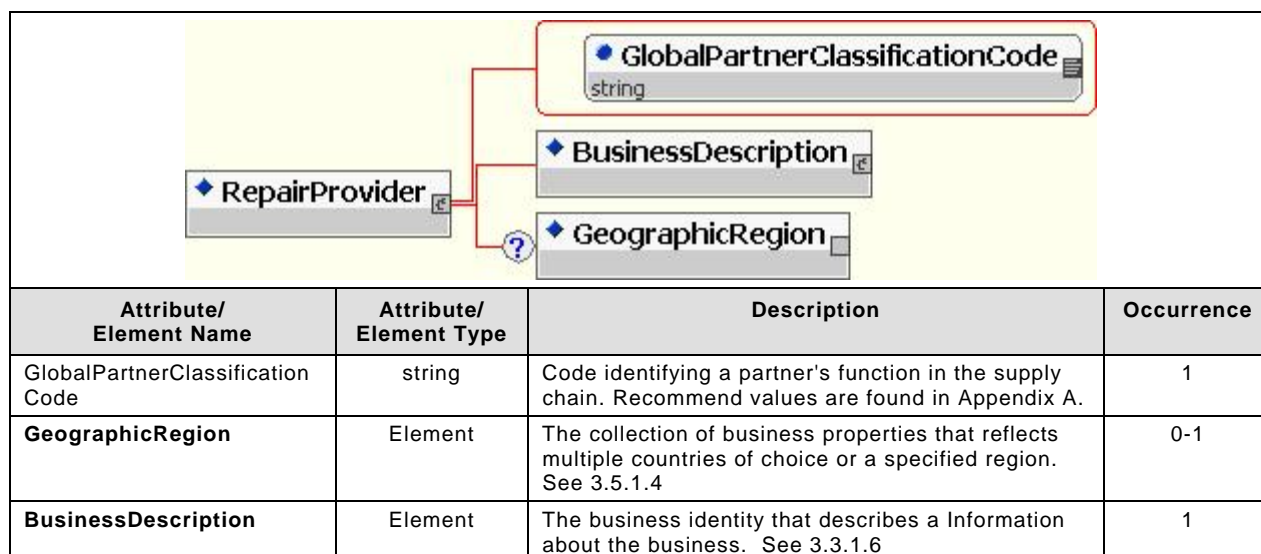
3.5.1.20 Element: ComponentLocationInformation

Description: The collection of business properties that describe the placement information of physical material that ensures the electrical interconnects for the product.



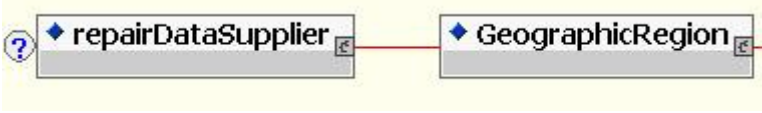
3.5.1.21 Element: RepairProvider

Description: The collection of business properties used to identify the business partner responsible for the repair or rework of a product.



3.5.1.22 Element: RepairDataSupplier

Description: The collection of business properties that describes this quality data event and the information need to support the quality of the product.

			
Attribute/ Element Name	Attribute/ Element Type	Description	Occurrence
GeographicRegion	Element	The collection of business properties that reflects multiple countries of choice or a specified region. See 3.5.1.4	0-1

Appendix A – Recommended Codes and Values

All - Recommend values and codes presented below are taken out of the RosettaNet PIP 7C6 Release 01 document. See www.rosettanet.org

<u>GlobalPartnerRoleClassificationCode</u>	Description
Entity Instances	
Account Supplier	Any trading partner that buys or sells products/services from customers and/or vendors.
Account User	Any trading partner that requires an account to buy or sell products/services.
Anonymous Buyer	A requestor of information that chooses to remain anonymous.
Appointment Provider	The stakeholder(s) in the shipment delivery activity.
Authorized Service Provider	The Service Provider authorized by an OEM to perform service on a unit.
Authorizer	The partner role that provides product authorization, from a product owner or manufacturer, for a reselling organization to resell a product.
Buyer	An employee or organization that buys products for a partner type in the supply chain.
Catalog Distributor	The partner role that distributes catalog information to catalog producers and buyers.
Catalog Producer	The partner role that produces catalog information for a partner type in the supply chain.
Change Requester	A party who has an interest in requesting a review of a possible change to the component. The requester may be any party including customers and suppliers.
Change Review Forum	A party who has responsibility for the review of Engineering Change Requests and the drafting and review of Engineering Change Orders. The Change Review Forum is assumed to be at the company that has responsibility for the engineering aspects of the component affected by the change.
Claim Requester	The owner of the shipments who is responsible for the intact delivery.
Consignee	The receiver of the shipment.
Credit Provider	This partner role is responsible for providing credit information about potential customers.
Credit Reference Requester	This partner role is responsible for requesting credit information about potential customers.
Customer	This partner role creates a demand for a product or service.
Customer Manager	This partner role manages the relationship with the business customers.
Decision Stakeholder	The party (such as suppliers, customers and others) who is responsible for the review and approval of the Engineering Change Approval Request. The stakeholders may be from multiple organizations.
Delivery Appointment Provider	A party that receives a request for a change to a previously scheduled delivery appointment.
Delivery Appointment Requester	A party that requests a change to a previously scheduled delivery appointment.
Demand Creator	The partner role that identifies the opportunity, submits design registration, provides engineering support to advance the opportunity towards design win, and generates revenue by satisfying customer demand for a product.
Failure Report Administrator	An employee or organizational entity that receives and processes PIP Failure Notifications.
Financing Processor	The organization that processes the request for financing.
Forecast Owner	The party that creates a sales or order forecast and is ultimately responsible for it.
Forecast Recipient	The party that receives a sales or order forecast.
Forecast Reply Recipient	The party that receives a forecast reply. The Recipient can be the original forecast owner or other forecast partner (Please refer to the GlobalPartnerClassificationCode).

Implementation Plan Creator	The partner role that creates, maintains and manages an implementation plan associated with an Engineering Change Order.
Initiator	The party that starts the data exchange.
In-transit Information User	The party who receives shipment status information.
Invoice Provider	The organization that generates the invoice.
Invoice Receiver	The organization being invoiced.
Invoice Reject Provider	The organization that rejects an invoice.
Invoice Reject Receiver	The organization being issued an Invoice Reject Notification.
Marketing Activity Information User	The party who uses information about Marketing Activities. This party might include distributors, and retail operations.
Marketing Activity Initiator	The partner role that distributes information about marketing activities being sponsored by the organization.
Payee	The party receiving a payment.
Payer	The party issuing a payment.
PIP Failure Notifier	An organizational process that automatically notifies the appropriate Failure Report Administrator of a PIP process failure.
Product Distributor	The party authorized by a Product Supplier to purchase goods and services from the Product Supplier and resell to customers.
Product Information Distributor	The partner role that distributes new product information to product information users and buyers.
Product Information Subscriber	The business partner that subscribes to product information from other business partners.
Product Information User	The partner role that uses product information to create or update enterprise systems and online promotion systems such as electronic catalog systems.
Product Provider	The partner role that creates a differentiated product, owns the registration process and creates a list of eligible products for use in design registration.
Product Supplier	This partner role supplies product to customers in the supply chain.
Quality Data Provider	The party responsible for sending the Repair Quality Data. The Provider, through various means, learns of product or product component defect(s).
Quality Data User	The party who receives the repair and/or test data. The User analyzes the data and incorporates findings into its business model.
Receiver	The intended recipient of products or business information. The Receiver may verify receipt if prescribed.
Responder	The party that replies to the initiators message.
Return Provider	The party responsible for authorizing and/or processing the return.
Return Receiver	A third-party or warehousing operation responsible for receiving returns, inspecting the package contents and comparing to the issued RMA to assure the contents are what was authorized on the RMA.
Return Requester	Any party wishing to return a product. This role could be played by a large end-user such as the Government Services Administration (GSA), a distributor, or a reseller.
Sales Facilitator	This partner role facilitates the sale of product between partners in the supply chain.
Sales Lead Originator	The party assigning a sales lead to another party.
Sales Lead Processor	The party who receives the sales lead. This party is responsible for accepting or rejecting the lead, and if accepted, reports the status of the lead.
Sales Marketing Claim Processor	The partner role that processes the claim and/or remits compensation to the Sales Marketing Claimant.
Sales Marketing Claimant	The partner role that requests reimbursement from a Sales Marketing Claim Processor.
Sales Marketing Program Reimbursement Recipient	The partner role that receives status on a previously submitted sales marketing claim, or who receives reimbursement without submitting a claim.
Sales Marketing Program Reimbursing	The partner role that is currently processing a sales marketing claim, (or providing a payment without a claim submitted) and who provides information on the status of the claim processing.
Seller	An organization that sells products to partners in the supply chain.
Shipment Information User	The party who receives shipment status information.
Shipment Requester	The party requesting transportation services.

Shipment Controller	The party who is authorized to make decisions regarding a shipment while in-transit.
Shipper	The party who relinquishes (assigns) a shipment to a transport service provider.
Solution Provider	The party that may architect, configure, engineer, sell, or determine the fulfillment of the configured solution to partners in the supply chain.
Solution Requester	This party that creates a demand for a product or service, or has contracted with a Solution Provider for the manufacture or fulfillment of a product(s).
Specification Provider	The partner role that creates or passes on manufacturing specifications. This may be a Solution Provider, an OEM who is sub-contracting manufacturing tasks like fabrication or assembly, or another party.
Specification User	The partner role that uses a manufacturing specification. This might be a sub-contract assembler or fabricator.
Stakeholder	The party that is required to implement an Engineering Change Order. The Stakeholder may include all levels of suppliers, customers or other parties. The Stakeholder may represent multiple organizations. The Stakeholder may draft and/or be responsible for completing tasks in an implementation plan.
Status Requester	The functional partner role, that could be a Product Provider, that creates a differentiated product, owns the registration process and creates a list of eligible products, or who is responsible for identifying the opportunity (that is, it could be a Demand Creator).
Status Responder	The organizational partner role, that could be a Product Provider, that creates a differentiated product, owns the registration process and creates a list of eligible products, or who is responsible for identifying the opportunity (that is, it could be a Demand Creator).
Supplier	This partner role supplies product to customers in the supply chain.
Tender Information User	The stakeholder(s) in the tendering activity.
Transport Service Provider	The party that provides transportation services for a Shipment Requester.
Warranty Provider	The provider who honors the warranty terms and reimburses the Authorized Service Provider for a service event performed under the terms of the warranty.

GlobalSupplyChainCode	Description
Entity Instances	
Electronic Components	The electronic components supply chain.
Information Technology	The information technology supply chain.
Semiconductor Manufacturing	The semiconductor manufacturing supply chain.

GlobalPartnerClassificationCode	Description
Entity Instances	
Broker	Representative of a third party.
Carrier	Product carrier for transporting goods in supply chain.
Contract Manufacturer	The party responsible for the services rendered.
Customs Broker	Product customs broker in supply chain.
Distribution Center	Product distributor in supply chain.
Distributor	Product distributor in supply chain.
End User	Product end user in supply chain.
End User Government	End user government.
Financier	Financial service provider in supply chain
Freight Forwarder	Product freight forwarder for transporting goods in supply chain.
Manufacturer	Product manufacturer in supply chain.
Original Equipment Manufacturer	Product manufacturer of original equipment in the supply chain.
Reseller	The party who buys goods from a manufacturer and resells them to customers unchanged.
Retailer	Product retailer in supply chain.
Service Provider	A provider of services such as repair, diagnoses, maintenance, installation or removal of a unit.
Shopper	Product shopper in supply chain.
Warehouser	Product warehouser in supply chain.

<u>GlobalDocumentFunctionCode</u>	Description
Constraint	Only GlobalDocumentFunctionCode equal to "Request" is allowed.
Entity Instances	
Request	The business document is a request for a business action to be performed by a partner.
Response	The business document is a response to a requesting partner.

<u>GlobalGeographicRegionCode</u>	Description
Entity Instances	
Global	All countries

<u>GlobalDocumentReferenceTypeCode</u>	Description
Entity Instances	
ASP Claim	The unique identifier assigned by the ASP for a warranty claim.
ASP Part Return	The unique identifier assigned by the ASP for a part return.
ASP Part Order	The unique identifier assigned by the ASP for a part order.
ASP Requisition	The unique identifier assigned by the ASP to reference a work order.
Commercial Invoice	
Contract	
Delivery Note	
Drawing #	
Invoice	
Master Event Number	
OEM Claim	The unique identifier assigned by the OEM for a warranty claim.
OEM Part Order	The unique identifier assigned by the OEM for a part order.
OEM Part Return	The unique identifier assigned by the OEM for a part return.
Purchase Order	
Purchase Order IN	
Purchase Order OUT	
Quote	
Requisition	
RMA - Returned Material Authorization	
Sales Order	
Serial Number	
Spec #	
Warranty Claim	Denotes a warranty claim.
Waybill	
Work Order	

<u>GlobalProductUnitOfMeasureCode</u>	Description
Entity Instances	
10 Kilogram Drum	
10,000 Gallon Tankcar	
100 Board Feet	
100 Pound Drum	
1000-pack	
100-Pack	
10-pack	
115 Kilogram Drum	
15 Kilogram Drum	
20 Foot Container	
20,000 Gallon Tankcar	
20-Pack	
25 Kilogram Bulk Bag	
300 Kilogram Bulk Bag	
40 Foot Container	
50 Pound Bag	
500 Kilogram Bulk Bag	
50-pack	
55 Gallon Drum	

Acre
Actual Pounds
Aluminum Pounds Only
Ampere
Bag
Bale
Ball
Band
Bar
Barrel
Barrel, Imperial
Barrels Per Day
Barrels Per Minute
Base Box
Base Weight
Basket
Batch
Batt
Batting Pound
Beam
Becquerel/kilogram
Belt
Billet
Bin
Block
Board
Board Feet
Bolt
Bottle
Box
British Thermal Unit (BTU)
British Thermal Units (BTUs) Per Cubic Foot
British Thermal Units (BTUs) Per Pound
Bucket
Bulk
Bulk Car Load
Bulk Pack
Bundle
Bunks
Bushel
Bushel, Dry Imperial
Calorie
Can
Candela
Canister
Car
Carat
Carboy
Card
Carload
Carton
Cartridge
Case
Cask
Cassette
Catchweight
Cell
Centiliter
Centimeter
Centipoise (CPS)
Chains (Land Survey)
Chest
Coil
Coil Group
Composite Product Pounds (Total Weight)

Cone
Connector
Container
Cover
Crate
Cubic centimeter
Cubic centimeter/second
Cubic Foot
Cubic inch
Cubic yard
Cubicmeter
Cup
Cycles
Cylinder
Day
Deal
Decimeter
Degree Celsius
Degree Fahrenheit
Dep. Factor
Die
Disk (Disc)
Dispenser
Display
Dozen
Dram
Drum
Dry Pounds
Each
Electrical Capacitance
Fluid Ounce
Fluid Ounce (Imperial)
Fluid Ounce US
Foot
Fuel Usage (Gallons)
Gage Systems
Gallon
Gigajoules
Gill (Imperial)
Grain
Gram
Gram/Cubic Centimeter
Gram/square meter
Grams Per 100 Centimeters
Grams Per 100 Grams
Grams Per Cubic Centimeter
Grams Per Kilogram
Grams Per Liter
Grams Per Milliliter
Grams Per Square Centimeter
Grams Per Square Meter
Great Gross (Dozen Gross)
Gross
Gross Barrels
Gross Gallons
Gross Kilogram
Gross Ton
Gross Yard
Group
Half Gallon
Half Hour
Half Liter
Hank
Heat lots
Hectare

Hectoliter
Hectopascal
Hertz
Hour
Hours
Hundred Boxes
Hundred Count
Hundred Sheets
Hundredth of a Carat
Imperial Gallons
Inch
Jar
Joint
Joule
Keg
Kelvin
Kiloampere
Kilobecquerel/Kilogram
Kilogram
Kilogram per cubic meter
Kilogram/Kilogram
Kilogram/square meter
Kilogramm pro Sekunde
Kilohertz
Kilojoule
Kilometer
Kilometer/hour
Kiloohm
Kilovolt
Kilowatt
Kilowatt-hour
Kit
Kubikdezimeter
Kubikmeter pro Sekunde
Lifts
Link
Liquid Pounds
Liter
Load
Lot
Lug
Mat
Megagram
Megagrams Per Hour
Megahertz
Megapascal
Megawatt
Meter
Meter pro Quadratsekunde
Meters per second
Micrograms Per Cubic Meter
Micrometer
Microsecond
Mikrogram/cubic meter
Mile
Milliampere
Millibar
Milligram/cubic meter
Milligram/kilogram
Milligram/Liter
Milligrams Per Cubic Meter
Milligrams Per Square Meter
Millijoule
Milliliter
Millimeter

Millimeter H2O
Millimol
Millimol/kilogram
Million BTU's
Millipascal seconds
Millisecond
Millitesla
Millivolt
Milliwatt
Minute
Miter
Mol
Mol/kilogram
Month
Multichip
Nanometer
Nanosecond
Net Barrels
Net Gallons
Net Imperial Gallons
Net Liters
Newton
Ohm
One
One Thousand Pieces
Ounce
Pack (PAK)
Package
Packet
Pad
Pail
Pair
Pallet
Pallet (Lift)
Pallet/Unit Load
Pallette
Panel
Parcel
Parts per billion (US)
Parts per million
Pascal
Pascal second
Pennyweight
Per Hundred Pieces
Percent
Percent Per 1000 Hours
Percent Weight
Percentage
Piece
Pint - US liquid
Pint U.S. Dry
Plate
Pound
Pounds Per 1000 Square Feet
Pounds Per Foot
Pounds Per Gallon
Pounds Per Piece of Product
Pounds Per Pound of Product
Pounds Per Thousand
Quart - US liquid
Rack
Ream of 500 Sheets
Reel
Ring
Rod

Roll	
Sack	
Second	
Set	
SET	Mask Set (SET)
Sheet	
Sheet-Metric measure	
Shipment	
Shot	
Skein	
Skid	
Sleeve	
Slip Sheet	
Spool	
Square	
Square foot	
Square inch	
Square kilometer	
Square meter	
Square meter/second	
Square mile	
Square millimeter	
Square Yard	
Statute Mile	
Stick	
Strip	
Super Bulk Bag	
Tablet	
Tank	
Tank Truck	
Tesla	
Thousand	
Ton	
Tonne	
Torr	
Tote	
Track Foot	
Trailer	
Train	
Tray	
Troy	
Troy OZ	
Truckload	
Tube	
Unitless Unit of Measure	
US gallon	
US pound	
US ton	
Vial	
Volt	
Wafer	
Watt	
Week	
WF	Wafer (WF)
Wrap	
Yard	
Year	

<u>GlobalQualityDispositionCode</u>		lines 46,121
Entity Instances		
Finished Goods Inventory - New	Indicates that the quality data being communicated is associated with a product that has completed the manufacturing process and is ready to be shipped. This disposition could also be used within the 7C6 PIP in conjunction with Product Quantity to communicate inventory levels of manufactured material in inventory.	
Finished Goods Inventory - Repaired/Updated	Indicates that the quality data being communicated is associated with a product that has completed the repair process and is ready to be shipped. This disposition could also be used within the 7C6 PIP in conjunction with Product Quantity to communicate inventory levels of material in inventory that is not "new" but is ready to be shipped.	
Manufacturing Analysis	Indicates that the quality data being communicated is associated with a product that has NOT completed the manufacturing process but data is being provided because of an engineering request or checkpoint.	
NFF	No failure found	
NTF	No trouble found	
Process Scrapped		
Received		
Receiving Scrapped		
Repair Analysis	Indicates that the quality data being communicated is associated with a product that has NOT completed the Repair/Update process but data is being provided because of an engineering request or checkpoint.	
Repaired		
Return to Manufacturer		
Shipped	Indicates that the quality data being communicated is associated with a product that has completed the manufacturing and/or repair/update process and has been shipped.	
Updated		

<u>GlobalFailureTypeCode</u>	Description
Entity Instances	
Primary Failure	The failure deemed to be "most significant" by the determining source.
Secondary Failure	A failure mechanism that contributes to the failure analysis process but is not deemed to be the primary reason for failure.

<u>GlobalRepairTypeCode</u>	Description
Entity Instances	
Primary Repair	The repair code related to the primary failure mechanism for the product or component.
Secondary Repair	The repair code related to the secondary failure mechanism for the product or component.

<u>GlobalAttachmentDescriptionCode</u>	Description
Entity Instances	
Assembly drawings	
Assembly/fabrication instructions	
Block diagrams	
Blueprints	
BOM	Bill of Material
CAD information	Computer Aided Design Information
Logistics	For example: packaging, carrier requirements, etc.
Quality data	Yield data
Sample plan	Quantity of samples in a sample plan
Schematics	
Test instructions	

<u>GlobalMimeTypeQualifierCode</u>	Description
Entity Instances	
application/activemessage	
application/andrew-inset	

application/applefile
application/atomicmail
application/batch-SMTP
application/cals-1840
application/commonground
application/cybercash
application/dca-rft
application/dec-dx
application/EDI-Consent
application/EDIFACT
application/EDI-X12
application/eshop
application/http
application/hyperstudio
application/iges
application/index
application/index.cmd
application/index.obj
application/index.response
application/index.vnd
application/ipp
application/mac-binhex40
application/macwriteii
application/marc
application/mathematica
application/msword
application/news-message-id
application/news-transmission
application/ocsp-request
application/ocsp-response
application/octet-stream
application/oda
application/pdf
application/pgp-encrypted
application/pgp-keys
application/pgp-signature
application/pkcs10
application/pkcs7-mime
application/pkcs7-signature
application/pkix-cert
application/pkixcmp
application/pkix-crl
application/postscript
application/prs.alvestrand.titraw-sheet
application/prs.cww
application/prs.nprend
application/remote-printing
application/riscos
application/rtf
application/sdp
application/set-payment
application/set-payment-initiation
application/set-registration
application/set-registration-initiation
application/sgml
application/sgml-open-catalog
application/slate
application/vemmi
application/vnd.\$commerce_battelle
application/vnd.3M.Post-it-Notes
application/vnd.accpac.simply.aso
application/vnd.accpac.simply.imp
application/vnd.acucobol
application/vnd.anser-web-certificate-issue-initiation
application/vnd.anser-web-funds-transfer-initiation

application/vnd.audiograph
application/vnd.businessobjects
application/vnd.claymore
application/vnd.commonspace
application/vnd.comsocaller
application/vnd.cups-postscript
application/vnd.cups-raster
application/vnd.cups-raw
application/vnd.cybank
application/vnd.dna
application/vnd.dpgraph
application/vnd.dxr
application/vnd.ecdis-update
application/vnd.ecowin.chart
application/vnd.ecowin.filerequest
application/vnd.ecowin.fileupdate
application/vnd.ecowin.series
application/vnd.ecowin.seriesrequest
application/vnd.ecowin.seriesupdate
application/vnd.enliven
application/vnd.epson.msf
application/vnd.epson.quickanime
application/vnd.epson.salt
application/vnd.epson.ssf
application/vnd.fdf
application/vnd.ffsns
application/vnd.FloGraphIt
application/vnd.framemaker
application/vnd.fujitsu.oasys
application/vnd.fujitsu.oasys2
application/vnd.fujitsu.oasys3
application/vnd.fujitsu.oasysgp
application/vnd.fujitsu.oasysprs
application/vnd.fujixerox.docuworks
application/vnd.fut-misnet
application/vnd.hp-HPGL
application/vnd.hp-hpid
application/vnd.hp-hps
application/vnd.hp-PCL
application/vnd.hp-PCLXL
application/vnd.ibm.MiniPay
application/vnd.ibm.modcap
application/vnd.intercon.formnet
application/vnd.intertrust.digibox
application/vnd.intertrust.nncp
application/vnd.intu.qbo
application/vnd.intu.qfx
application/vnd.is-xpr
application/vnd.japannet-directory-service
application/vnd.japannet-jpnstore-wakeup
application/vnd.japannet-payment-wakeup
application/vnd.japannet-registration
application/vnd.japannet-registration-wakeup
application/vnd.japannet-setstore-wakeup
application/vnd.japannet-verification
application/vnd.japannet-verification-wakeup
application/vnd.koan
application/vnd.lotus-1-2-3
application/vnd.lotus-approach
application/vnd.lotus-freelance
application/vnd.lotus-notes
application/vnd.lotus-organizer
application/vnd.lotus-screencam
application/vnd.lotus-wordpro
application/vnd.mediastation.cdkey

application/vnd.meridian-slideshow
application/vnd.mif
application/vnd.minisoft-hp3000-save
application/vnd.mitsubishi.misty-guard.trustweb
application/vnd.Mobius.DAF
application/vnd.Mobius.DIS
application/vnd.Mobius.MSL
application/vnd.Mobius.PLC
application/vnd.Mobius.TXF
application/vnd.motorola.flexsuite
application/vnd.motorola.flexsuite.adsi
application/vnd.motorola.flexsuite.fis
application/vnd.motorola.flexsuite.gotap
application/vnd.motorola.flexsuite.kmr
application/vnd.motorola.flexsuite.ttc
application/vnd.motorola.flexsuite.wem
application/vnd.ms-artgalry
application/vnd.ms-asf
application/vnd.ms-excel
application/vnd.ms-powerpoint
application/vnd.ms-project
application/vnd.ms-tnef
application/vnd.ms-works
application/vnd.musician
application/vnd.music-niff
application/vnd.netfpx
application/vnd.noblenet-directory
application/vnd.noblenet-sealer
application/vnd.noblenet-web
application/vnd.novadigm.EDM
application/vnd.novadigm.EDX
application/vnd.novadigm.EXT
application/vnd.osa.netdeploy
application/vnd.pg.format
application/vnd.pg.osasli
application/vnd.powerbuilder6
application/vnd.powerbuilder6-s
application/vnd.powerbuilder7
application/vnd.powerbuilder75
application/vnd.powerbuilder75-s
application/vnd.powerbuilder7-s
application/vnd.previewsystems.box
application/vnd.publishare-delta-tree
application/vnd.rapid
application/vnd.seemail
application/vnd.shana.informed.formdata
application/vnd.shana.informed.formtemplate
application/vnd.shana.informed.interchange
application/vnd.shana.informed.package
application/vnd.street-stream
application/vnd.svd
application/vnd.swiftview-ics
application/vnd.triscape.mxs
application/vnd.truedoc
application/vnd.ufdl
application/vnd.uplanet.alert
application/vnd.uplanet.alert-wbxml
application/vnd.uplanet.bearer-choice
application/vnd.uplanet.bearer-choice-wbxml
application/vnd.uplanet.cacheop
application/vnd.uplanet.cacheop-wbxml
application/vnd.uplanet.channel
application/vnd.uplanet.channel-wbxml
application/vnd.uplanet.list
application/vnd.uplanet.listcmd

application/vnd.uplanet.listcmd-wbxml
application/vnd.uplanet.list-wbxml
application/vnd.uplanet.signal
application/vnd.vcx
application/vnd.visio
application/vnd.wap.wbxml
application/vnd.wap.wmlc
application/vnd.wap.wmlscriptc
application/vnd.webturbo
application/vnd.wrq-hp3000-labelled
application/vnd.wt.stf
application/vnd.xara
application/vnd.xfdl
application/vnd.yellowriver-custom-menu+A91
application/wita
application/wordperfect5.1
application/x400-bp
application/xml
application/zip
audio/32kadpcm
audio/basic
audio/L16
audio/vnd.cns.anp1
audio/vnd.cns.inf1
audio/vnd.digital-winds
audio/vnd.lucent.voice
audio/vnd.nortel.vbk
audio/vnd.octel.sbc
audio/vnd.qcelp
audio/vnd.rhetorex.32kadpcm
audio/vnd.vmx.cvsd
image/cgm
image/g3fax
image/gif
image/ief
image/jpeg
image/naplps
image/png
image/prs.btif
image/prs.pti
image/tiff
image/vnd.cns.inf2
image/vnd.dwg
image/vnd.dxf
image/vnd.fastbidsheet
image/vnd.fpx
image/vnd.mix
image/vnd.net-fpx
image/vnd.svf
image/vnd.wap.wbmp
image/vnd.xiff
message/delivery-status
message/disposition-notification
message/external-body
message/http
message/news
message/partial
message/rfc822
message/s-http
model/iges
model/mesh
model/vnd.dwf
model/vnd.flatland.3dml
model/vnd.gtw
model/vrml

multipart/alternative
multipart/appledouble
multipart/byteranges
multipart/digest
multipart/encrypted
multipart/form-data
multipart/header-set
multipart/mixed
multipart/parallel
multipart/related
multipart/report
multipart/signed
multipart/voice-message
text/calendar
text/css
text/directory
text/enriched
text/html
text/plain
text/prs.lines.tag
text/rfc822-headers
text/richtext
text/rtf
text/sgml
text/tab-separated-values
text/uri-list
text/vnd.abc
text/vnd.fly
text/vnd.fmi.flexstor
text/vnd.in3d.3dml
text/vnd.in3d.spot
text/vnd.latex-z
text/vnd.motorola.reflex
text/vnd.wap.wml
text/vnd.wap.wmlscript
text/xml
video/mpeg
video/quicktime
video/vnd.motorola.video
video/vnd.motorola.videop
video/vnd.vivo

GlobalComponentRepairCode
Entity Instances
Repaired
Replaced
Updated